REALAUDIO 8
UPGRADE GUIDE

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INTRODUCTION

ENCODING THE HIGHEST QUALITY AUDIO CONTENT USING REALAUDIO® 8 IS EASY, IT REQUIRES NO CHANGES TO YOUR PRODUCTION PROCESS, AND IS AS SIMPLE AS CHECKING A DIALOG BOX IN REALPRODUCER 8, VERSION 8.5. This document details the key information for encoding content using RealAudio 8. It outlines the simple steps that will enable you to deliver your customers the highest quality audio at narrowband and broadband bit rates, and goes into how you can use RealProducer Plus® 8, RealServer 8, and third-party applications to deliver the highest quality stereo music experience.

HIGHER QUALITY AUDIO AT LOWER BIT RATES

RealAudio 8 has enabled the highest quality stereo audio experience through the addition of two new compression/decompression algorithms (codecs) into the RealAudio family. These two codecs, the RealNetworks *RealAudio 8 Low Bit rate Stereo Music* and *Sony ATRAC3* codecs, are designed to greatly improve the quality of audio in the range of 16 Kbps to 352 Kbps. They build upon RealNetworks leading codec technology by enabling you to deliver a stereo experience to your customers at mainstream bit rates. Furthermore, the integration of these codecs with RealProducer and third-party applications, the auto update feature of the RealPlayer, and RealAudio 8 compatibility with RealServer 7 and higher, enable you to take advantage of the new Stereo Music enhancements easily and simply, without requiring new encoding equipment, procedures, or changes to your production processes.

Delivering the highest-quality audio experience to your Internet customer now means that you can deliver stereo sound all the way from its source to the end customer. RealAudio 8 improves the quality of your music content through intelligent use of voice in stereo environments, and it provides dramatic and superior quality for mixed voice and music environments such as radio and movie content.

WHAT IS SO GREAT ABOUT STEREO?

The major difference between stereo and mono audio is depth of field. A stereo audio signal has the capability of sounding larger and more expansive because the information is spread out across two speakers instead of one. Therefore, the listener can be drawn into a listening experience and enveloped in sound. In music, stereo recordings place the musical instruments in a three-dimensional space not possible with mono recordings. For a recording to make full use of the stereo spectrum, some of the information in the left and right speakers must be different. In a recording of an orchestra, for example, the violins would appear on the left side of the spectrum, and the basses and cellos would appear on the right side, just as in a concert hall. This effect is often achieved by using stereo microphones. In popular music, many of the instruments will appear in the middle of the stereo spectrum, with specific instruments, like background singers, horn players and cymbals spread out to the left and right. The location of a voice or instrument in the stereo field is referred to as “panning,” a term derived from the same effect in film and video.

NEW AUDIO CODECS

RealAudio 8 has tightly integrated two new codecs to the existing set of RealAudio codecs available for use in RealProducer and third-party software applications. The 105Kbps stereo music and above codecs were jointly developed by Sony and RealNetworks. These ATRAC3 codecs are compatible with Sony's line of portable music players as well as Sony VAIO computers. When encoding content using this new codec, you will be able to upload it to any Sony compatible portable device using the RealJukebox. The codecs ranging from 16 Kbps to 96 Kbps are optimized for low to mid range bandwidth use. In addition to these great codecs, RealProducer SDK includes a 66 Kbps and a 94 Kbps ATRAC3 option, also available from the RealJukebox user interface. RealAudio 8 remains compatible with RealPlayer 7 and RealPlayer 8.

COMPATIBLE WITH SONY VAIO COMPUTERS AND PORTABLE MUSIC PLAYERS

By including ATRAC3 technology in RealAudio 8, RealJukebox will become compatible with any Sony ATRAC3 portable device, broadening customers' ability to easily upload stereo music on the devices of their choice.

EASY AND FAST UPGRADE OF THE REAL ENTERTAINMENT CENTER

RealNetworks has made it easy to make your new RealAudio 8 content available to the large universe of RealPlayer and RealJukebox users. All that is required for RealPlayer 7, RealPlayer 8 and RealJukebox 2 users is an update of their software. The update is small, taking approximately 15 seconds to download over a modem. This quick update will occur the first time that a customer wishes to listen to a RealAudio 8 file. In addition, RealNetworks is actively encouraging its customers to automatically update its players on a regular basis.

TRANSITIONING TO REALAUDIO IS EASY

MAKING THE TRANSITION TO REALAUDIO 8 IS SIMPLE AND EASY. To start making great sounding stereo using the new RealAudio codecs all you need to do is the following:

- Upgrade your RealProducer to version 8.5 from www.realnetworks.com
- When choosing your audio format from the "Audio Format" dialogue box on the main RealProducer 8 window, simply choose "Stereo Music", and you'll be using RealAudio 8
- If you are using a third-party tool such as Sonic Foundry's Sound Forge, simply choose stereo music in your output settings when exporting to RealMedia. The same choices for bit rates available in RealProducer 8 version 8.5 are available in any tool that allows you to export in the .RM or RealMedia format. RealNetworks continually updates its list of third-party applications partners. To find out which applications partners currently support RealAudio 8, go to www.realnetworks.com.

Below we list several production examples to further clarify.

INTERNET RADIO STATION WITH LIVE FEED

For an Internet radio station that broadcasts a continuous live feed, making the jump to RealAudio 8 isn't a long and involved process. The first step in the conversion process is installing the latest version of RealProducer Plus, version 8.5, which includes all the new RealAudio 8 codecs. If you're already sending a stereo live feed, the RealProducer will automatically switch over to the newer codecs for you. If you are using SureStream™ to stream to different target audiences, as long as you have *Stereo Music* selected in the audio format pop-up menu in the main RealProducer window, RealAudio 8 codecs will be used in all your streams.

INTERNET RADIO STATION WITH ON-DEMAND CONTENT

For an Internet radio station that features on demand content, the transition to RealAudio 8 is just as simple. You will need the latest version of RealProducer Plus 8, version 8.5. When encoding your clips for distribution, selecting *Stereo Music* in your audio settings dialog box will convert your source .WAV or .AIFF files to RealAudio 8 format.

INDEPENDENT INTERNET FILM DISTRIBUTOR WITH ON-DEMAND CONTENT ENCODING AUDIO TOGETHER WITH VIDEO

The default target audience settings are different when your audio is encoded together with video. Because stereo audio requires more bandwidth at lower bit rates, RealSystem G2 audio codecs for the target audiences from 28K modem up to single ISDN are automatically selected in RealProducer Basic 8 when encoding both audio and video in a single file. This enables you to deliver the highest quality video and audio experience. In general, most people viewing video on slower connection speeds would prefer to use mono codecs to improve the quality of video playback. With RealProducer Plus 8, however, you can simply change your audio to the RealAudio 8 codecs by changing the default target audience settings. If you have RealProducer Basic 8, and wish to upgrade to RealProducer Plus 8, go to www.realnetworks.com.

RIPPING CD'S TO REALAUDIO 8

As with any audio production, it is important to start with high quality source material. If you are encoding content from Audio CD format, the steps you'll need to take to convert your CD's to RealAudio 8 are simple and straightforward. First, you'll need to "rip" your tracks using RealJukebox or Sonic Foundry's CD Architect. The file format you'll want to save them to is .WAV or .AIFF. Then, using RealProducer you can encode these files as stereo audio by selecting "Stereo Music" from the "audio setting" menu. If you use the RealJukebox you can rip your CD directly in RealAudio 8 format, saving an intermediate step in your workflow. That's it!

If you are creating audio from an analog source such as a microphone, simply go ahead and use the same audio production techniques that you would use for creating high quality audio for radio, CD or television. RealAudio 8 was designed to integrate seamlessly into your existing production techniques

EQUIPMENT CHECKLIST

MICROPHONE – A microphone is the first link in an audio production chain. It converts sound waves in the air into electrical waves traveling along a cable. The quality of your microphone greatly determines the quality of your encoded audio. If you are recording a single voice and mixing it together with music, you can pan the voice to the center so that it is equally loud in both speakers and the listener will perceive it as coming from the center of the stereo field.

MIXER – A mixer is a device that allows you to combine several audio sources (microphones, CD players, etc). A mixer allows you to determine relative volume between your different sources and pan them left or right in the stereo field.

COMPRESSOR – A compressor is a device that allows you to control the dynamic range of an audio signal. Not to be confused with data compression, dynamic compression makes the loud sounds softer and the soft sounds louder. The end result is that your audio can be captured at a higher level and with greater signal-to-noise ratio.

SOUND CARD – The sound card is the point at which your audio is converted from an analog waveform into digital data. The sound card is a very crucial point in the audio production chain. Because the relative output of audio devices is different, it's important to use the correct inputs when connecting a microphone or mixer to a sound card. Also, be sure to use stereo cabling all along the signal path to ensure that your audio is recorded in stereo.

SOFTWARE CHECKLIST

REALPRODUCER – RealProducer Basic and RealProducer Plus 8, version 8.5 already encode to RealAudio 8.

REALPLAYER – RealAudio 8 content created with RealProducer 8 is compatible with RealPlayer 7.0 and above. When playing back RealAudio 8 content for the first time, your customer's RealPlayer will automatically update itself with the correct settings necessary to play RealAudio 8 content.

REALJUKEBOX – RealJukebox will automatically encode Stereo Music in RealAudio 8 format. Once you encode music tracks in RealAudio 8, using the Sony ATRAC3 codec, you will be able to easily drag and drop them to any Sony compatible Portable Device.

REALSERVER – RealAudio 8 content created with RealProducer 8 is compatible with RealServer 7and above.

APPENDIX A: REALAUDIO 8 BIT RATES TABLE

The following is a table that gives you an idea of which bit rates and codecs to use, depending upon your target audience.

Codec Name	Bit Rate	Frequency Response	Target Audience and Use
RealAudio 8	16 Kbps Stereo Music	6.9 kHz	For stereo music over 28 Kbps modem connections, or music-based video over Dual ISDN connections.
RealAudio 8	20 Kbps Stereo Music	8.6 kHz	For stereo music over 28 Kbps modem connections, or music-based video over Dual ISDN connections.
RealAudio 8	20 Kbps Stereo Music High	9.9 kHz	High Response: For stereo music over 28 Kbps modem connections, or music-based video over Dual ISDN connections.
RealAudio 8	32 Kbps Stereo Music	10.3 kHz	For stereo music over 56 Kbps modem connections, or music-based video over LAN/DSL/Cable modem connections.
RealAudio 8	32 Kbps Stereo Music High	10.3 kHz	High Response: For stereo music over 56 Kbps modem connections, or music-based video over LAN/DSL/Cable modem connections.
RealAudio 8	44 Kbps Stereo Music	13.8 kHz	For stereo music over single ISDN connections.
RealAudio 8	44 Kbps Stereo Music High	16 kHz	High Response: For stereo music over single ISDN connections.
RealAudio 8	64 Kbps Stereo Music High	16 kHz	For stereo music over Dual ISDN and LAN/DSL/Cable Modem connections.
RealAudio 8	96 Kbps Stereo Music	16 kHz	For stereo music over Dual ISDN and LAN/DSL/Cable Modem connections.
RealAudio 8 – ATRAC3	105 Kbps Stereo Music	13.7 kHz	For stereo music over Dual ISDN and LAN/Cable/DSL modem connections.
RealAudio 8 – ATRAC3	132 Kbps Stereo Music	16.5 kHz	For high-quality stereo music over LAN/Cable/DSL modem connections.
RealAudio 8 – ATRAC3	146 Kbps Stereo Music	16.5 kHz	For high-quality stereo music over LAN/Cable/DSL modem connections.
RealAudio 8 – ATRAC3	176 Kbps Stereo Music	19.2 kHz	For archival-quality stereo music.
RealAudio 8 – ATRAC3	264 Kbps Stereo Music	22 kHz	For archival-quality stereo music.
RealAudio 8 – ATRAC3	352 Kbps Stereo Music	22 kHz	For archival-quality stereo music.

APPENDIX B: REALPRODUCER DEFAULT SETTINGS

Listed below are the default target audience settings for RealProducer Basic 8 and RealProducer Plus 8. With RealProducer Plus, you can manually change which codec is assigned to which target audience.

Target Audience	Audio Only Default Codec
28K	20 Kbps Stereo Music High - RA8
56K	32 Kbps Stereo Music High - RA8
Single ISDN	44 Kbps Stereo Music High - RA8
Dual ISDN	64 Kbps Stereo Music - RA8
Corporate LAN	132 Kbps Stereo Music - RA8
256 DSL	176 Kbps Stereo Music - RA8
312 DSL	264 Kbps Stereo Music - RA8
512 DSL	352 Kbps Stereo Music - RA8

Target Audience	Audio and Video Default Codec
28K	8 Kbps mono music
56K	8 Kbps mono music
Single ISDN	11 Kbps mono music
Dual ISDN	20 Kbps stereo music
Corporate LAN	32 Kbps stereo music
256 DSL	44 Kbps stereo music
312 DSL	64 Kbps stereo music
512 DSL	96 Kbps stereo music